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Myobia apodemi sp. nov. (Acarina, Myobiidae) Parasitic on
Apodemus argenteus argenteus (Mammalia, Muridae)

With 5 Text-figures

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ABSTRACT *Myobia apodemi* sp. nov. parasitic on *Apodemus argenteus argenteus* was described basing on 7 females and 6 males. This new mite resembles closely *Myobia nodae* Matuzaki, 1965, occurring on *Apodemus speciosus speciosus* in Japan. The two mites are, however, clearly separated from each other by the difference in the nature of the dorsal setae. The Japanese name, Himenezumi-kemochidani, was proposed for *M. apodemi*.

Dusbábek (1969) mentioned that only four species were relegated to the genus *Myobia*, and he did not list *Myobia nodae* Matuzaki, 1965, which had been described basing on all the developmental stages taken from *Apodemus speciosus speciosus* in Shikoku, Japan. Prior to the description of *M. nodae*, Matuzaki (1961) had a thorough study on the morphological changes of *Myobia musculi* in accordance with the advancement of the stages. Subsequently, she found that a *Myobia* mite occurring on the *Apodemus* mouse resembled *M. musculi*, but was distinct in having characteristic setae throughout the nymphal and adult stages. Although *M. musculi* has been recorded from various *Apodemus* mice as cited in Dusbábek (1969), detailed comparisons of *Myobia* mites parasitic on these hosts with *M. nodae* as well as *M. musculi* will be necessary.

The two *Apodemus* mice, *A. speciosus* and *A. argenteus*, and their subspecies are distributed in the main and adjacent islands of Japan. Since the description of Matuzaki (1965), *M. nodae* was recorded from *A. speciosus ainu* in Hokkaido (Ono, 1969) and from *A. speciosus speciosus* in Nagano Prefecture, central Honshu (Uchikawa, unpublished).

On the other hand, occurrence of any myobiid mite on another mouse, *A. argenteus*, has never been known in Japan. The present author found a *Myobia* mite for the first time on this mouse and compared it with the description of *M. nodae* and the mites taken from *A. speciosus speciosus*. As a result, this mite is proved to be closely related to *M. nodae*, but is distinct. A description of the new

mite will be given below.

Myobia apodemi sp. nov.

Female (Fig. 1). Holotype measured 210 microns wide at level between legs II and III, 370 microns long inclusive of gnathosoma. Body surface striated as in other members of the family Myobiidae.

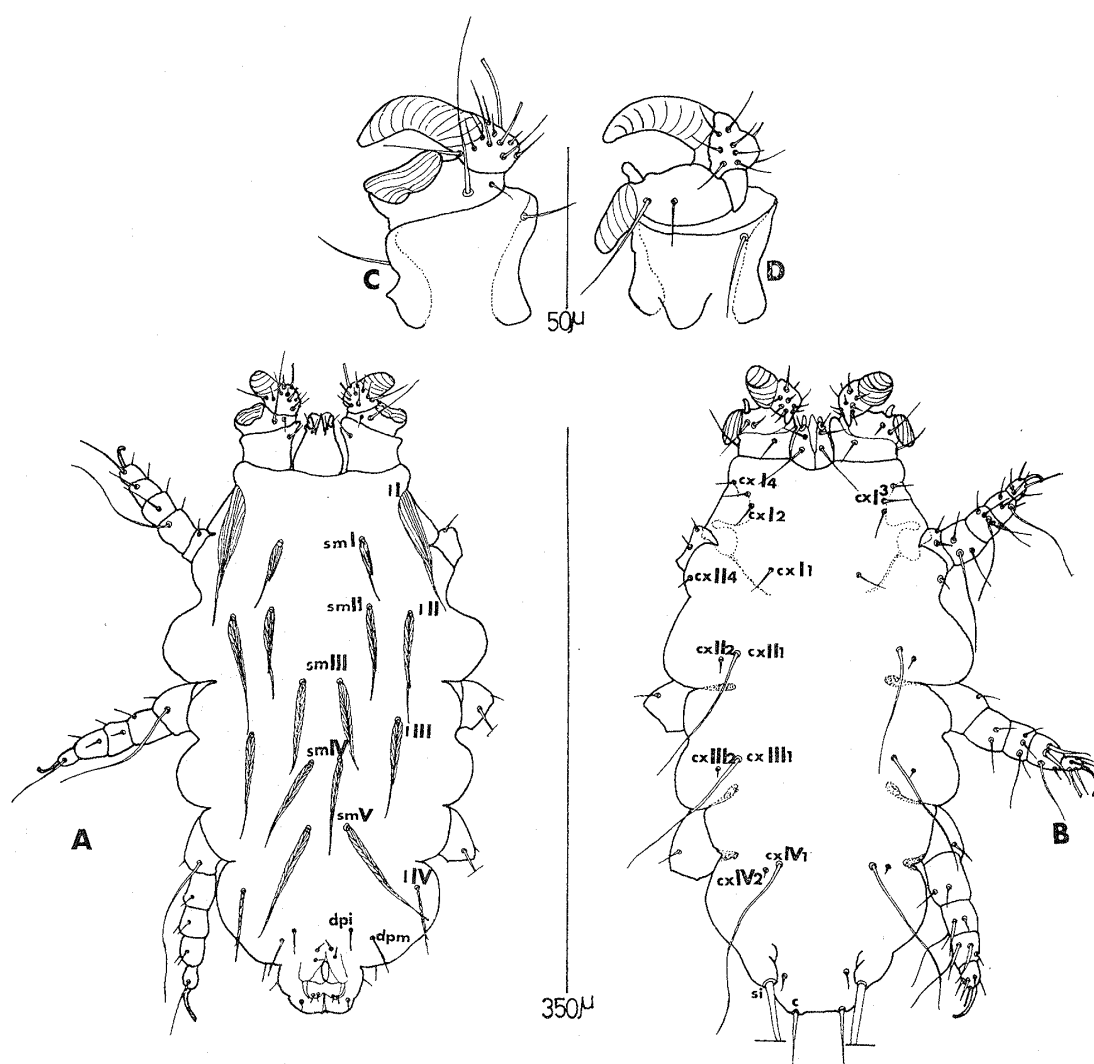


Fig. 1. Female of *Myobia apodemi* sp. nov.—A, Dorsal view; B, ventral view; C, dorsal view of leg I; D, ventral view of leg I.

Dorsum. Setal arrangement as illustrated in Fig. 1 A and measurements of each seta as represented in Table 1. Four pairs of lateral setae; first three pairs (*ls* I–III) foliaceous with first pair being the strongest; fourth pair (*ls* IV) finely striated and weakly barbed. Five pairs of submedian setae; first pair (*sm* I) foliaceous,

Table 1
Ranges and means (in parentheses) in micron of setal length and body size of the females of *Myobia apodemi* sp. nov. and *Myobia nodae* Matuzaki.

Seta	<i>M. apodemi</i> sp. nov (n=7)	<i>M. nodae</i> (n=6) from Nagano Pref.	<i>M. nodae</i> (n=3) from Kochi Pref.*
<i>l</i> I	75– 93 (83.5)	93–105 (97.5)	97.5–105.0 (101.7)**
<i>l</i> II	70– 75 (71.4)	60– 73 (65.0)	57.5– 72.5 (64.2)
<i>l</i> III	63– 70 (66.7)	60– 65 (61.5)	55.0– 65.0 (60.8)
<i>l</i> IV	38– 53 (42.8)	19– 28 (24.6)	25.0– 26.3 (25.4)
<i>sm</i> I	35– 48 (41.4)	40– 48 (42.9)	35.0– 50.0 (42.5)
<i>sm</i> II	55– 63 (58.2)	63– 73 (66.8)	63.8– 67.5 (65.6)
<i>sm</i> III	55– 60 (59.3)	60– 70 (65.0)	57.5– 62.5 (59.2)
<i>sm</i> IV	55– 63 (59.3)	63– 73 (67.5)	60.0– 66.3 (62.9)
<i>sm</i> V	68– 75 (72.1)	67– 88 (76.0)	62.5– 70.0 (65.8)
<i>dpi</i>	14– 18 (16.1)	15– 23 (18.3)	17.5– 20.0 (18.3)
<i>dpm</i>	23– 29 (25.9)	18– 23 (20.0)	16.3– 20.0 (17.9)
<i>c</i>	38– 43 (39.6)	63– 75 (67.0)	—
<i>si</i>	250–295 (273.5)	350–390 (364.0)	300.0–400.0 (346.7)
Body length inclusive of gnathosoma	365–400 (373.1)	380–430 (390.0)	360.0–390.0 (380.0)
Body width	200–225 (208.6)	215–220 (219.2)	200.0–210.0 (206.7)

*: From Matuzaki (1965). **: Means were calculated by the present author.

expanded basally, originating anteriorly from mediate level between lateral setae I and II; second pair (*sm* II) being the same in nature with first pair, situated on slightly anterior level of lateral setae II and definitely shorter than them; third to fifth pairs (*sms* III–V) striated, expanded and tapered smoothly. Dorsal postero-internal and postero-median setae (*dpi* and *dpm*) barbed; the latter setae distinctly longer than the former ones. Sacral external setae present on caudal projection which includes genital region. Genital region surrounded by a pair of arms each terminating in a single claw-like structure. Four pairs of anal setae; anterior 2 pairs (situated caudad from claw-like structure) inconspicuous, measuring about 4 microns long. Dorsum of *M. nodae* is also given in Fig. 2 for comparison with that of the present species.

Venter. Setal arrangement as illustrated in Fig. 1 B. Four pairs of minute setae on coxal regions I. Coxal regions II with 3 pairs of setae; postero-internal pair (*cx* II 1) being long and slender. Coxal regions III and IV each bearing 2 pairs of setae with postero-internal ones (*cx* III 1 and *cx* IV 1) being the same in nature with *cx* II 1. A pair of sacral internal setae (*si*) being stout and very long but shorter than body length inclusive of gnathosoma. Two pairs of setae present caudally on venter; first pair minute, situated between sacral internal setae; second pair (caudal setae, *c*) being long, originating from caudal margin.

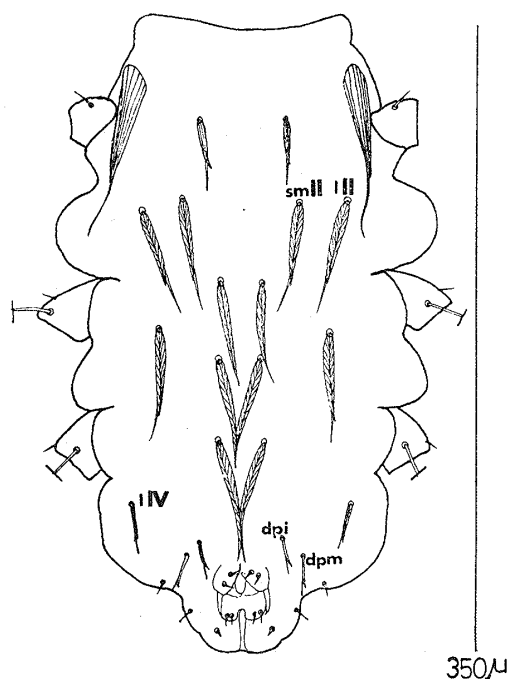


Fig. 2. Female of *Myobia nodae* Matuzaki; dorsal view of idiosoma.

Gnathosoma. Pedipalp projecting by 2 segments, each with a single seta. On hypostoma, a pair of rostral dorsal setae present dorsally and 2 pairs of rather long setae, rostral anterior and posterior setae, situated ventrally.

Legs. Leg I consisting of 3 segments as illustrated in Fig. 1 C and D. Basal segment with 3 setae and a ventral protuberance. Middle segment bearing 2 setae dorsally and 3 setae ventrally with dorsal one being very long and ventral one being modified to form a stout process; a tongue-like and a more developed striated structures present on this segment. Apical segment with a basal bill-like structure, terminating in a strong, striated formation which is usually coiled, lacking claws and bearing about 20 setae, inclusive of 2 notched ones. Legs II–IV consisting of 5 free segments and each terminating in a single claw. Number and nature of setae as illustrated in Fig. 1 A and B.

Male (Fig. 3). Allotype measured 175 microns wide at level between legs II and III, 290 microns long inclusive of gnathosoma. Body surface as in female.

Dorsum. Setal arrangement as illustrated in Fig. 3 A and measurements of setae as represented in Table 2. Three lateral setae (*ls* I–III) foliaceous and strong; lateral setae I (*l* I) slender than in female. Two pairs of submedian setae (*sms* I–II) barbed; submedian setae I originating caudad from basal level of lateral setae I; submedian setae II situated on slightly anterior level of lateral setae II and more than 1.5 times as long as first pair. Dorsal postero-internal and postero-medial setae (*dpi* and *dpm*) unpaired; the former seta usually terminating anteriad

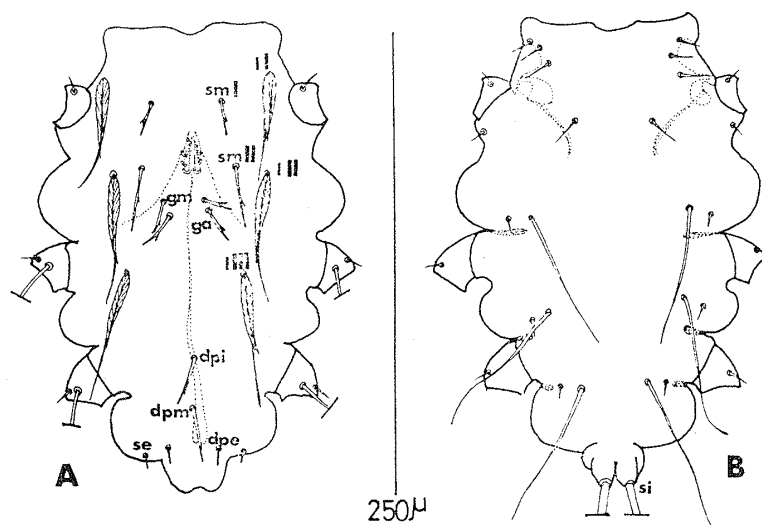


Fig. 3. Male of *Myobia apodemi* sp. nov.—A, Dorsal view of idiosoma; B, ventral view of idiosoma.

Table 2

Ranges and means (in parentheses) in micron of setal length and body size of the males of *Myobia apodemi* sp. nov. and *Myobia nodae* Matuzaki.

Seta	<i>M. apodemi</i> sp. nov. (n=6)	<i>M. nodae</i> (n=1) from Nagano Pref.	<i>M. nodae</i> (n=3) from Kochi Pref.*
<i>l I</i>	63– 73 (67.0)	78	65.0– 70.0 (68.3)**
<i>l II</i>	68– 83 (76.3)	68	60.0– 75.0 (67.5)
<i>l III</i>	68– 73 (70.6)	65	57.5– 60.0 (58.3)
<i>sm I</i>	16– 20 (17.8)	23	17.5– 22.5 (20.0)
<i>sm II</i>	28– 33 (29.4)	35	27.5– 35.0 (30.0)
<i>ga</i>	20– 25 (23.0)	38	32.5– 37.5 (34.8)
<i>gm</i>	13– 20 (16.3)	23	12.5– 20.0 (15.8)
<i>dpi</i>	16– 26 (22.8)	43	40.0– 77.5 (?)*** (54.2)
<i>dpm</i>	21– 31 (25.0)	43	37.5– 40.0 (39.2)
<i>si</i>	280–300 (290.0)	340	320.0–370.0 (350.0)
Body length inclusive of gnathosoma	270–290 (280.0)	280	270.0–320.0 (293.3)
Body width	155–175 (168.3)	160	140.0–170.0 (156.7)

*: From Matuzaki (1965). **: Means were calculated by the present author.

***: Marked by the present author.

from base of the latter. Paired dorsal postero-external setae (*dpe*) minute. Sacral external setae (*se*) reduced. Genital anterior (*ga*) and median (*gm*) setae barbed; the former setae being longer than the latter ones but not reaching the beginnings of lateral setae III. Genital region including three or more pairs of setae; detailed

formation not seen. Penis as illustrated in Fig. 3 A. For the comparison of this mite with *M. nodae*, dorsum of the latter species is presented in Fig. 4.

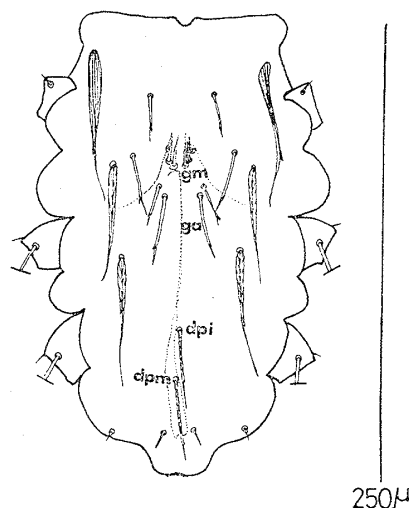


Fig. 4. Male of *Myobia nodae* Matuzaki; dorsal view of idiosoma.

Venter. Setation on coxal regions I to IV as in female. Caudal projection bearing only a single pair of stout sacral internal setae (*si*) and lacking other two pairs of setae existing in female.

Gnathosoma and legs. Essentially as in female.

Immature forms. Unknown.

Materials. Holotype: Female, collected on Happo-one, Hakuba Village, Nagano Prefecture, Japan, October 29, 1972. Allotype: Male, from the same locality on the same date as the holotype. Paratypes: 5 pairs of males and females from the same locality as the holotype, October 28–29, 1972, and one female from the same locality, July 21, 1971.

All the types are deposited in the Department of Parasitology, Faculty of Medicine, Shinshu University.

Host. *Apodemus argenteus argenteus* Temminck, 1845.

Remarks. The present species, *Myobia apodemi* sp. nov., resembles *M. nodae* Matsuzaki parasitic on *A. speciosus* in Japan. The chaetotaxy on the body, gnathosoma and all legs is identical in both species. Although a pair of ventral setae on the coxal regions IV (*cx* IV 2) are lacking in the original description, *M. nodae* virtually possesses these setae, which are very minute, less conspicuous than corresponding setae of *M. apodemi* and can be found with difficulty. The minor but clear differences between the 2 species are present in the nature of the dorsal setae as described below. In the female of *M. nodae*, submedian setae II are subequal in length with lateral setae II; lateral setae IV are rather short; dorsal postero-median setae are only slightly stronger than dorsal postero-internal setae; anterior anal setae measure about 7 microns long. The sizes of these setae are different in the female

of *M. apodemi*: Submedian setae II are distinctly shorter than lateral setae II; lateral setae IV are 1.5 times or more as long as those of *M. nodae*; dorsal postero-median setae are prominently stronger than dorsal postero-internal setae (Figs. 1-2, Table 1); and anterior anal setae measure only 4 microns long. In the male of *M. nodae*, genital anterior setae (*ga*) and dorsal postero-internal setae (*dpi*) are long; the former setae reach the bases of lateral setae III and the latter one extends past the beginning of dorsal postero-median seta (*dpm*). These two setae are short in the male of *M. apodemi* (Table 2) and each does not reach the base of the corresponding seta (Figs. 3-4).

Although these differential characteristics are not so striking, the setae situated closer to the genital region have a tendency to differ in length between the two mites. This and the difference in the host preferences have led the author to the separation of *M. apodemi* from *M. nodae*.

The new mite and *M. nodae* parasitizing the Japanese *Apodemus* mice differ distinctly from the other 3 *Myobia* mites, *M. musculi*, *M. stewarti* and *M. otomyia*, parasitic on the rodents of the family Muridae (Matuzaki, 1961, 1965; Radford, 1948 a, b; Lawrence, 1951) in having the elongate setae (*cx IV 1*) ventrally on the coxal regions IV.¹⁾

The four of the 5 *A. argenteus* mice caught on Happonone harboured *M. apodemi*. This indicates that the incidence of the mite on *A. argenteus* is rather high, though any myobiid mite has not previously been recorded from this mouse in Japan.

The specific name, *apodemi*, is adopted for the present mite for representing the mite being a specific ectoparasite of the genus *Apodemus*. Himenezumi-kemochidani is proposed as the Japanese name for *M. apodemi*.

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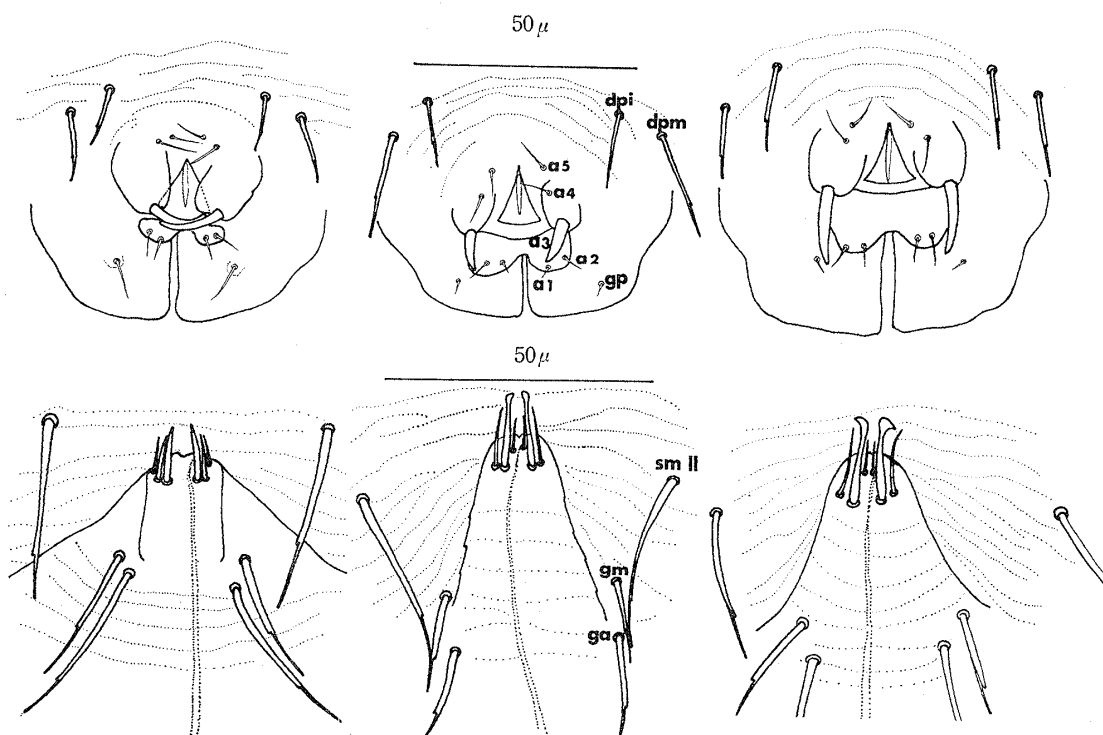
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1) *Myobia otomyia* Lawrence does not bear any seta ventrally on the coxal regions IV.

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- 1948 b. A revision of the fur mites Myobiidae (Acarina). *Ibid.*, **20**: 525-531.

ADDENDUM

Lukoschus and Driessen (1970) pointed out in their paper "*Myobia micro-midis* spec. nov. (Myobiidae: Trombidiformes) from *Micromys minutus* Pallas" as appeared in *Acarologia*, **12**: 119-126, that the myobiid mite, *Myobia multivaga* Poppe, 1908, parasitic on European *Apodemus* mice had long been erroneously relegated to the genus *Radfordia* by many European acarologists. Recently, the present author had an opportunity to examine 11 female and 6 male specimens of *M. multivaga* through the courtesy of Dr. F. S. Lukoschus, Zoological Institute, Catholic University, Nijmegen, the Netherlands. *M. multivaga*, *M. nodae* and *M. apodemi* closely resemble one another, but they are differential in both sexes in having characteristic genital region. The setae *al*, *a3* and *gp* of the female and the hairs of the penis slide of the male differ in size and form according to respective species, as shown in the following figures.



Myobia multivaga Poppe *Myobia apodemi* sp. nov. *Myobia nodae* Matuzaki
Fig. 5. Structure of genital region of 3 *Myobia* species. Above: female; below: male.